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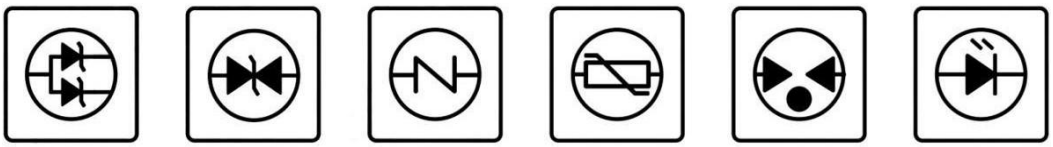
SEMICONDUCTOR




# STPS3L60x-MS

**Product specification**

# STPS3L60x-MS

**Power Schottky rectifier**

## Description

Axial and surface mount power Schottky rectifier suited for switch mode power supplies and high frequency dc to dc converters. Packaged in SMB and SMBF, this device is intended for use in low voltage, high frequency inverters and small battery chargers and for applications where there are space constraints, for example telecom battery charger.

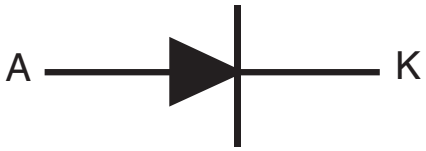
## Features

- Negligible switching losses
- Low forward voltage drop
- Avalanche capability specified

## Reference News

| STPS3L60U-MS | MARKING |
|---|---|
|  DO-214AA(SMB) | MSKSEMI G36 |

| STPS3L60UF-MS | MARKING |
|---|---|
|  SMBF | MSKSEMI FG36 |




**Device summary**

| | |
|---|---|
| $I_{F(AV)}$ | 3 A |
| $V_{RRM}$ | 60 V |
| $T_{j\ (max)}$ | 150 °C |
| $V_{F\ (max)}$ | 0.61 V |

# Characteristics

## Absolute Ratings (limiting values)

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $V_{RRM}$ | Repetitive peak reverse voltage | | 60 | V |
| $I_{F(RMS)}$ | RMS forward current | | 10 | A |
| $I_{F(AV)}$ | Average forward current | $T_L$ = 105 °C δ = 0.5( SMB) | 3 | A |
| | | $T_L$ = 127 °C δ = 0.5(SMBF) | | |
| $I_{FSM}$ | Surge non repetitive forward current | $t_p$ = 10 ms Sinusoidal | 100 | A |
| $P_{ARM}$ | Repetitive peak avalanche power | $t_p$ = 1 μs $T_j$ = 25 °C | 2000 | W |
| $T_{stg}$ | Storage temperature range | | -65 to + 150 | °C |
| $T_j$ | Maximum operating junction temperature(2) | | 150 | °C |
| dV/dt | Critical rate of rise reverse voltage | | 10000 | V/μs |

1. limiting values, per diode
2. $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ condition to avoid thermal runaway for a diode on its own heatsink

## Thermal resistance

| Parameter | | | Value | Unit |
|---|---|---|---|---|
| $R_{th\ (j-l)}$ | Junction to leads | SMBF | 10 | °C/W |
| | | SMB | 20 | |

## Static electrical characteristics

| Symbol | Parameter | Tests Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $I_R$ (1) | Reverse leakage current | $T_j$ = 25 °C | $V_R = V_{RRM}$ | - | - | 150 | µA |
| | | $T_j$ = 100 °C | | - | 4 | 15 | mA |
| | | $T_j$ = 125 °C | | - | 14 | 30 | |
| $V_F$ (1) | Forward voltage drop | $T_j$ = 25 °C | $I_F$ = 3 A | - | - | 0.62 | V |
| | | $T_j$ = 100 °C | | - | 0.53 | 0.61 | |
| | | $T_j$ = 125 °C | | - | 0.51 | 0.59 | |
| | | $T_j$ = 25 °C | $I_F$ = 6 A | - | - | 0.79 | |
| | | $T_j$ = 100 °C | | - | 0.62 | 0.71 | |
| | | $T_j$ = 125 °C | | - | 0.6 | 0.69 | |

1. Pulse test : $t_p$ = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation :

$P = 0.44 \times I_{F(AV)} + 0.05 \times I_F{}^2{}_{(RMS)}$

**Figure 1. Average forward power dissipation versus average forward current**

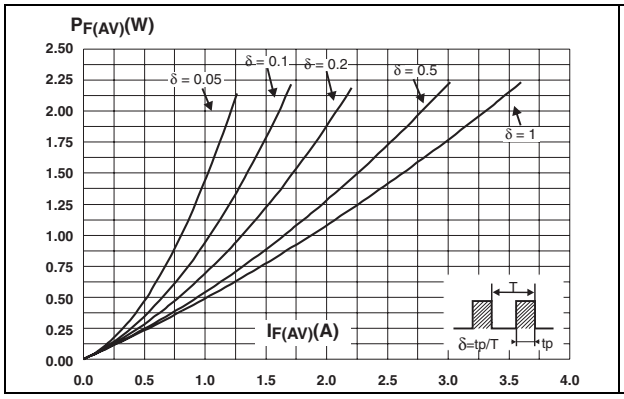



**Figure 2. Average forward current versus ambient temperature (δ = 0.5) (SMB)**

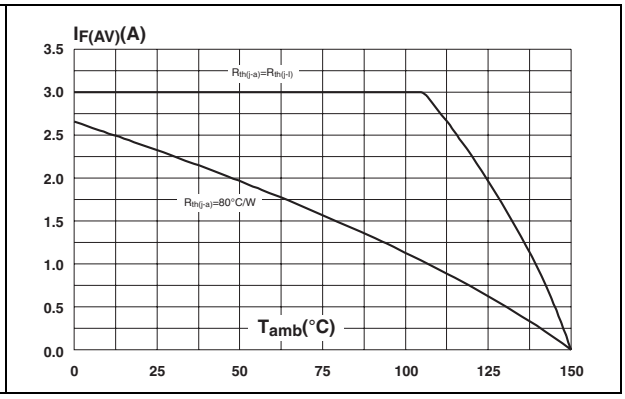


**Figure 3. Reverse leakage current versus reverse voltage applied (typical values)**

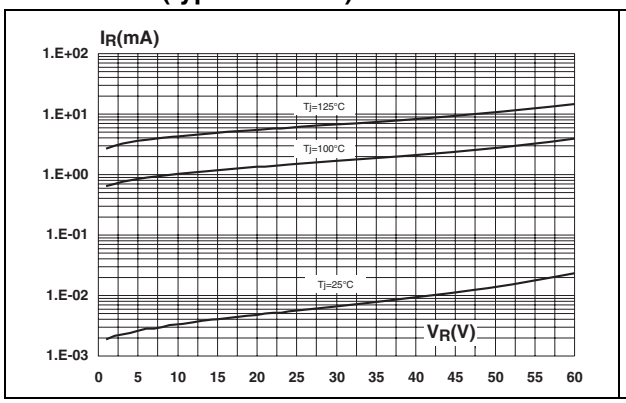



**Figure 4. Junction capacitance versus reverse voltage applied (typical values)**

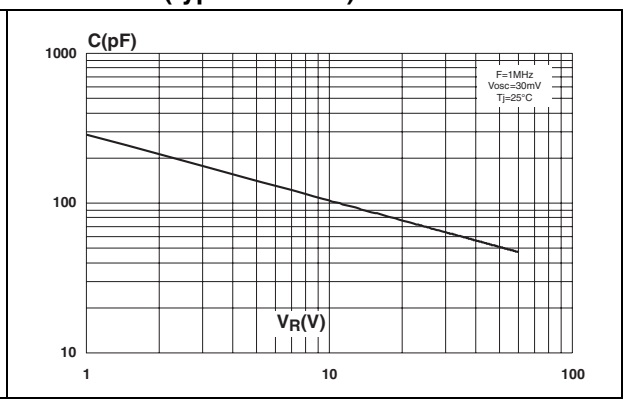



**Figure 5. Forward voltage drop versus forward current (high level)**

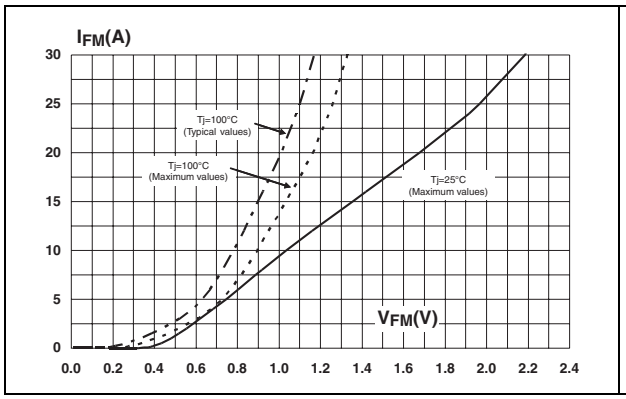



**Figure 6. Forward voltage drop versus forward current (low level)**

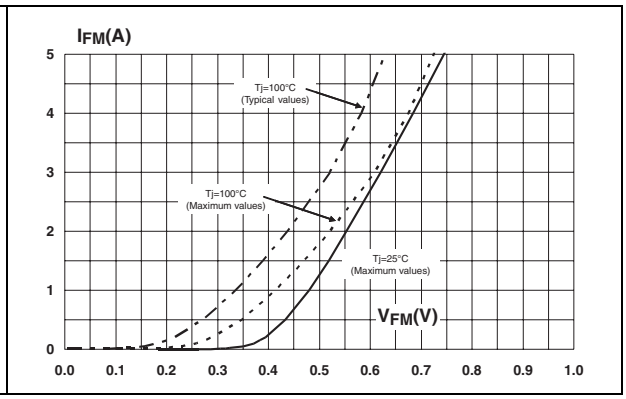



**Figure 7. Thermal resistance junction to ambient versus copper surface under each lead (SMB)**

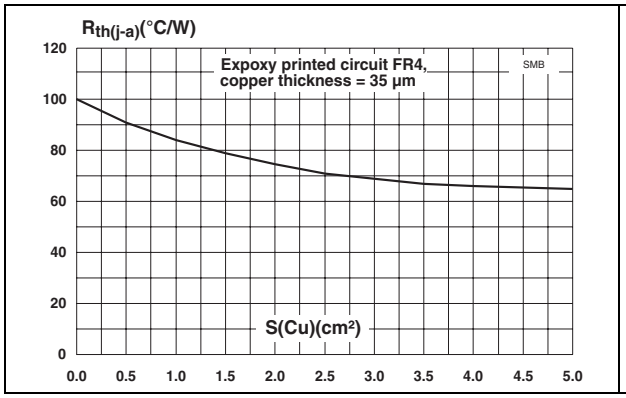



**Figure 8. Thermal resistance junction to ambient versus copper surface under each lead (SMBflat)**

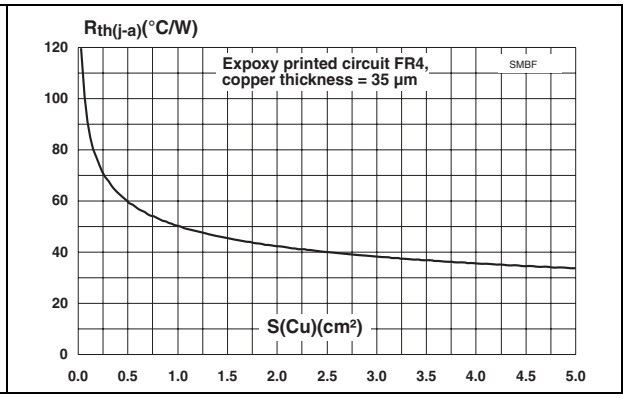


**Figure 9. Non repetitive surge peak forward current versus overload duration (maximum values) (SMB)**

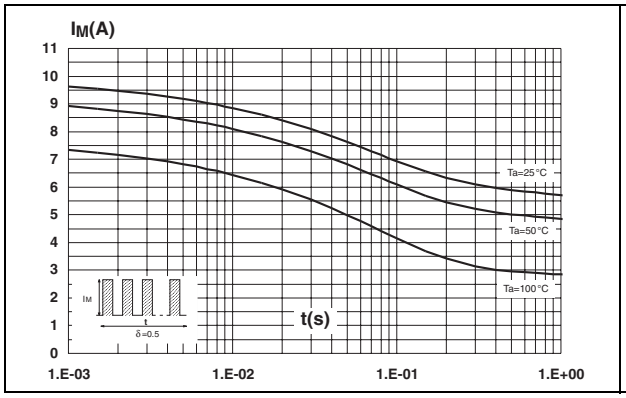



**Figure 10. Non repetitive surge peak forward current versus overload duration (maximum values) (SMBF)**

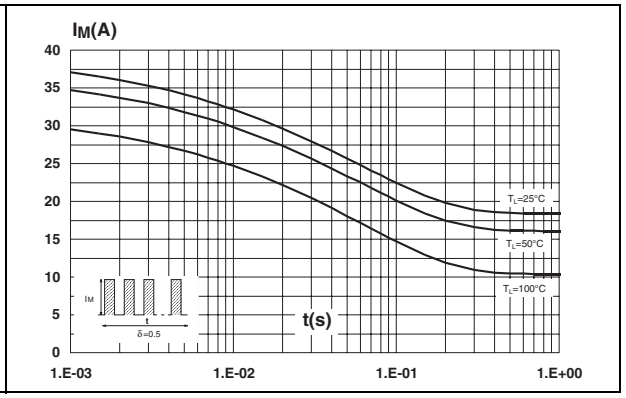



**Figure 11. Relative variation of thermal impedance junction to ambient versus pulse duration (SMB)**

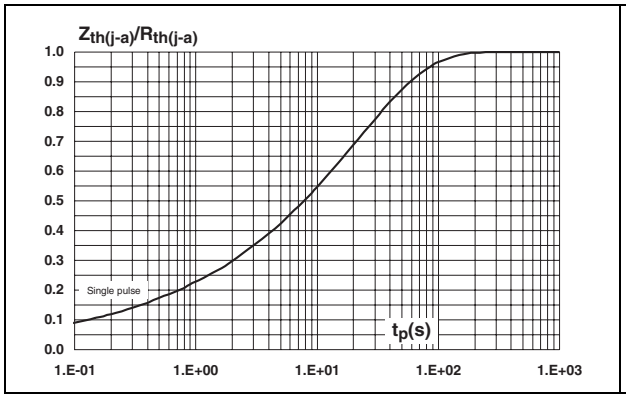



**Figure 12. Relative variation of thermal impedance junction to lead versus pulse duration (SMBF)**

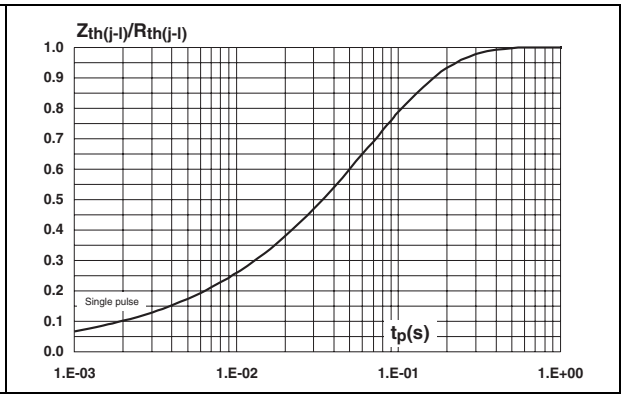


**Figure13. Normalized avalanche power derating versus pulse duration**

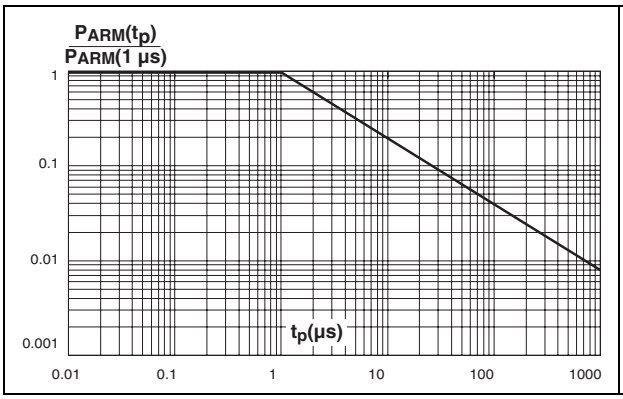



**Figure 14. Normalized avalanche power derating versus junction temperature**

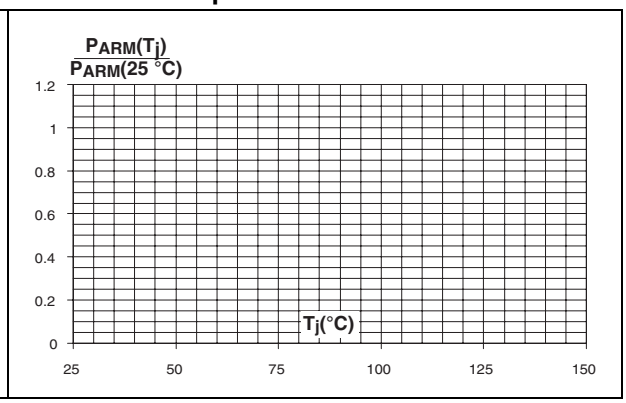
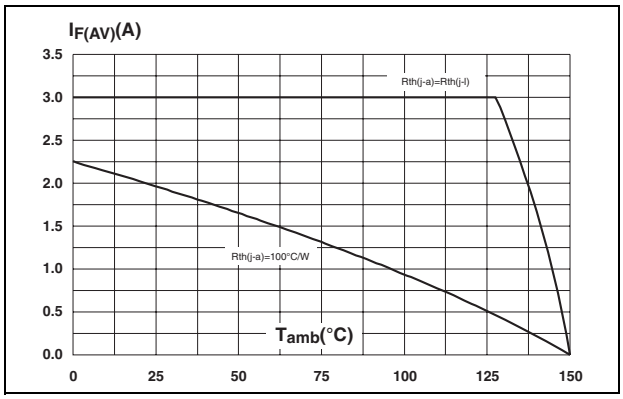
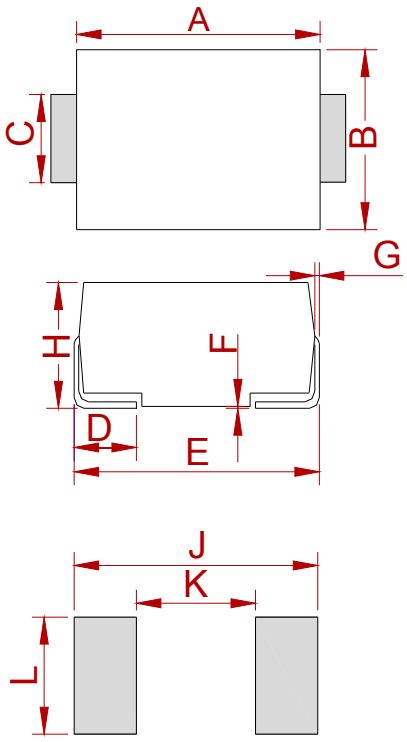



**Figure 4. Average forward current versus ambient temperature (δ = 0.5) (SMBflat)**



## PACKAGE MECHANICAL DATA



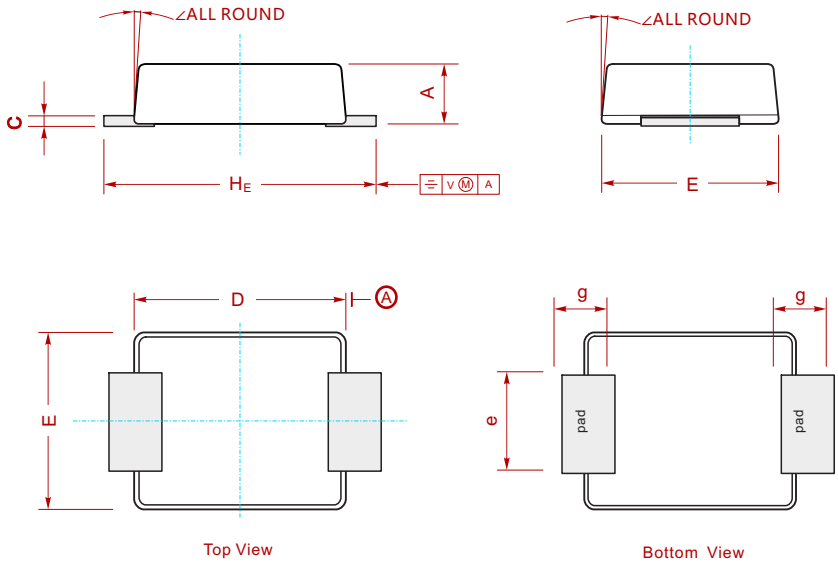

DO-214AA (SMB)

| Ref. | Dimensions | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 4.25 | 4.75 | 0.167 | 0.187 |
| B | 3.30 | 3.94 | 0.130 | 0.155 |
| C | 1.85 | 2.21 | 0.073 | 0.087 |
| D | 0.76 | 1.52 | 0.030 | 0.060 |
| E | 5.08 | 5.59 | 0.200 | 0.220 |
| F | 0.051 | 0.203 | 0.002 | 0.008 |
| G | 0.15 | 0.31 | 0.006 | 0.012 |
| H | 2.11 | 2.44 | 0.083 | 0.096 |
| J | 6.80 | | 0.270 | |
| K | | 2.60 | | 0.100 |
| L | 2.40 | | 0.090 | |

## REELSPECIFICATION

| P/N | PKG | QTY |
|---|---|---|
| STPS3L60U-MS | DO-214AA (SMB) | 2500 |

## PACKAGEECHANICALDATA




| UNIT | | A | C | D | E | $H_E$ | e | g | ∠ |
|---|---|---|---|---|---|---|---|---|---|
| mm | max | 1.3 | 0.26 | 4.4 | 3.7 | 5.5 | 2.2 | 1.0 | 9° |
| | min | 1.1 | 0.18 | 4.2 | 3.5 | 5.1 | 1.9 | | |
| mil | max | 51 | 10 | 173 | 146 | 216 | 86 | 40 | |
| | min | 43 | 7 | 165 | 138 | 200 | 75 | | |

## Order information

| P/N | PKG | QTY |
|---|---|---|
| STPS3L60UF-MS | SMBF | 5000 |

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